

What is claimed is:

1. A fluid separation conduit cartridge comprising:
 - a housing unit;
 - 5 a fluid separation conduit within the housing unit;
 - an inlet orifice in fluid communication with a first end of the fluid separation conduit;
 - an outlet orifice in fluid communication with a second end of the fluid separation conduit, the fluid separation conduit providing a fluid flow path within the housing unit from the inlet orifice to the outlet orifice, wherein at least one of the inlet orifice and the outlet orifice comprises a ferrule sub-assembly, seated in the inlet orifice or the outlet orifice, comprising a ferrule defining a ferrule socket receiving one end of the fluid separation conduit, a ferrule ring on the ferrule, and a frit body at an exterior surface of the ferrule; and
 - 15 a memory unit mounted to the housing unit.
2. The fluid separation conduit cartridge in accordance with claim 1 in which the fluid separation conduit is potted.
- 20 3. The fluid separation conduit cartridge in accordance with claim 1 in which the fluid separation conduit is a flexible tube.
4. The fluid separation conduit cartridge in accordance with claim 1 in which the fluid separation conduit is a microfluidic channel defined by a multi-layer laminated substrate.
- 25 5. The fluid separation conduit cartridge in accordance with claim 1 in which the inlet orifice is in a first projection extending outwardly from the housing unit and the outlet orifice is in a second projection extending outwardly from the housing unit.
- 30 6. The fluid separation conduit cartridge in accordance with claim 5 in which the housing unit comprises an end plate secured to and closing an open-ended concave housing component,

and the first projection and the second projection are substantially symmetrical and parallel projections from the end plate of the housing unit.

7. The fluid separation conduit cartridge in accordance with claim 1 in which the fluid
5 separation conduit comprises a packing material.

8. The fluid separation conduit cartridge in accordance with claim 7 in which the packing material is operative to separate species in a fluid that are introduced into the fluid separation conduit.

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9. The fluid separation conduit cartridge in accordance with claim 7 in which the packing material is selected from the group consisting of materials with nonpolar functional groups, materials with negatively charged functional groups, and materials with positively charged functional groups.

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10. A fluid separation conduit cartridge comprising:

a housing unit;

a fluid separation conduit within the housing unit;

an inlet orifice in fluid communication with a first end of the fluid separation conduit; and

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an outlet orifice in fluid communication with a second end of the fluid separation conduit, the fluid separation conduit providing a fluid flow path within the housing unit from the inlet orifice to the outlet orifice, wherein at least one of the inlet orifice and the outlet orifice comprises a ferrule sub-assembly, seated in the inlet orifice or the outlet orifice, comprising a ferrule defining a ferrule socket receiving one end of the fluid separation conduit, a ferrule ring on the ferrule, and a frit body at an exterior surface of the ferrule.

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11. The fluid separation conduit cartridge in accordance with claim 10 in which the fluid
30 separation conduit is potted.

12. The fluid separation conduit cartridge in accordance with claim 10 in which the ferrule has a fluid flow passage extending through an end wall of the ferrule to the ferrule socket.

13. The fluid separation conduit cartridge in accordance with claim 12 in which the frit body is positioned at an exterior surface of the end wall.

14. The fluid separation conduit cartridge in accordance with claim 12 in which the frit body is seated in a well in the exterior face of the end wall.

15. The fluid separation conduit cartridge in accordance with claim 12 in which the frit body stands proud of the exterior face of the ferrule and is operative to serve as a seating and sealing surface.

16. A fluid separation conduit cartridge comprising:

a housing unit;

a fluid separation conduit within the housing unit;

a potting compound potting the fluid separation conduit in the housing unit;

an inlet orifice in fluid communication with a first end of the fluid separation conduit; and

an outlet orifice in fluid communication with a second end of the fluid separation conduit, the fluid separation conduit providing a fluid flow path within the housing unit from the inlet orifice to the outlet orifice.

17. The fluid separation conduit cartridge in accordance with claim 16 in which the potting compound is selected from the group consisting of epoxies, glass filled epoxies, metal filled epoxies, and carbon-filled epoxies.

18. The fluid separation conduit cartridge in accordance with claim 16 further comprising a memory unit.

19. The fluid separation conduit cartridge in accordance with claim 16 further comprising a packing material in the fluid separation conduit, the packing material being operative to separate species in a fluid that are introduced into the fluid separation conduit.

5 20. A method of making a fluid separation conduit cartridge, the method comprising:
 providing a housing unit including at least a first orifice;
 inserting a fluid separation conduit in the at least first orifice of the housing unit;
 attaching a first end of the fluid separation conduit to an inlet port in the housing
 unit; and
 10 attaching a second end of the fluid separation conduit to an outlet port in the
 housing unit.

21. The method of claim 20 further comprising packing a stationary phase in the fluid
 separation conduit.

22. The method of claim 20 further comprising disposing a potting compound in the housing
 unit in a manner to surround the fluid separation conduit.

23. An analytical system comprising:
 a fluid flow channel;
 a fluid separation conduit cartridge; and
 a detector, the fluid separation conduit cartridge being in fluid communication with
 the fluid flow channel and comprising
 a housing unit,
 25 a fluid separation conduit within the housing unit,
 an inlet orifice in fluid communication with a first end of the fluid
 separation conduit,
 an outlet orifice in fluid communication with a second end of the
 fluid separation conduit and in fluid communication with the detector, the
 30 fluid separation conduit providing a fluid flow path within the housing
 unit from the inlet orifice to the outlet orifice, wherein at least one of the

inlet orifice and the outlet orifice comprises a ferrule sub-assembly, seated in the inlet orifice or the outlet orifice, comprising a ferrule defining a ferrule socket receiving one end of the fluid separation conduit, a ferrule ring on the ferrule, and a frit body at an exterior surface of the ferrule, and
5 a memory unit mounted to the housing unit.

24. The analytical system of claim 23 further comprising a device for generating fluid flow to the inlet orifice.

10 25. The analytical system of claim 24 in which the device for generating fluid flow is a pump.

15 26. The analytical system of claim 23 further comprising a treatment unit in fluid communication with the fluid flow channel and the fluid separation conduit cartridge, the treatment unit being positioned between the fluid flow channel and the inlet orifice of the fluid separation conduit cartridge.

20 27. The analytical system of claim 26 in which the treatment unit is a guard column, a filter, or at least one pre-concentrations silo.

28. The analytical system of claim 23 wherein the fluid flow channel is defined within a multi-layer laminated manifold.